BIOLOGICAL STATUS OF THE VARIETAL TAXA OF *THYMOPHYLLA PENTACHAETA* (ASTERACEAE: TAGETEAE)

B. L. Turner
Plant Resources Center
The University of Texas at Austin
Austin, Texas 78712
billie@uts.cc.utexas.edu

ABSTRACT

The biological status of *Thymophylla* [*Dyssodia*] *pentachaeta* is evaluated; the species was treated by Strother (1969, 1986) as having four infraspecific taxa: var. *belenidium*, var. **hartwegii**, var. **pentachaeta** and var. **puberula**. After examining most of the specimens that his taxonomy was based upon, it is concluded that the all of the taxa are worthy of specific rank, except for var. *belenidium*, which is treated as a synonym of *T. pentachaeta*. Since all of these taxa were previously treated as species, no new names are required. Reasons for the dispositions are given, along with maps showing their distributions, these based upon numerous specimens assembled since the seminal study of Strother. *Phytologia 91(2): 340-346 (August, 2009).*

KEY WORDS: Asteraceae, Tageteae, *Dyssodia, Thymophylla, T. pentachaeta,* Argentina, Mexico, U.S.A.

Strother (2006) provided a systematic treatment of *Thymophylla pentachaeta* (DC.) Small for the Flora of North America, this largely based upon his doctoral study of the genus *Dyssodia* (s.l.). In this, he recognized a subsp. *hartwegii*, this having but a single var. *hartwegii* (A. Gray) Strother; and a subsp. *pentachaeta*, this having three varieties: var. *belenidium* (DC.) Strother, var. *pentachaeta* (DC.) Small and var. *puberula* (Rydb.) Strother.

In my treatment of the Comps of Mexico (Turner 1996) I inappropriately recognized *Thymophylla pentachaeta* as possessing

only two varieties: var. *pentachaeta* and var. *hartwegii*. My detailed reexamination of the group has led to the present treatment in which *T. puberula* is resurrected, leading to the recognition of three species in the complex. The biological status of each of these is discussed below.

var. *belenidium*

The type of this taxon is from Argentina, based upon specimens obtained in the province of Mendoza by Arnott prior to 1838, the year of its publication. Strother accepted the taxon as a valid variety, and assumed it to be confined to Argentina and the southwestern U.S.A. and adjacent northern Mexico. In his key to taxa, he distinguished the variety from var. *pentachaeta* by its shorter peduncles (2-5 cm vs. longer); outer phyllaries nearly free to the base (vs. not so), these bearing 3-6 pairs of marginal glands (vs. "fewer glands"). If one applies such key leads to specimens from Argentina (on file at LL-TEX) it will be found that both var. *belenidium* and var. *pentachaeta* occur in that country, but such is not noted by Strother. Presumably, he believed Argentina to lack specimens referable to var. *pentachaeta*. Further, I found so much variation in the characters called to the fore by Strother, that I was unable to map a coherent var. *belenidium* in either Argentina or North America. In short, I take the two taxa to be synonymous. Fig. 1 shows the distribution of the two taxa as interpreted by Strother. I would map these as but a continuous, highly variable, var. *pentachaeta*, both in Argentina and North America (Figs. 1, 2 and 3).

var. pentachaeta = Thymophylla pentachaeta Figs. 3, 5

The type of this taxon is from the state of Nuevo Leon, Mexico, first collected by Berlandier in the vicinity of Monterrey prior to its publication by De Candolle in 1836. As indicated in the above account, I consider *T. belenidium* to be synonymous with var. *pentachaeta*, the characters separating these are highly variable and when mapped as a syndrome do not stand up to meaningful morpho-geographical interpretations.

var. puberula = Thymophylla puberula Fig. 4

The type of this taxon is from the state of San Luis Potosi, Mexico, first collected by Schaffer in 1877 in the Valley of San Luis Potosi. As indicated by Strother (his Fig. 18), this taxon is sympatric with *T. pentachaeta* over many a mile of Mexico (Fig. 4). In spite of the numerous populations sampled, very few intermediates between the two taxa have been detected in the field or in the herbarium, either by Strother (at least by annotations on specimens) or myself, this in spite of the fact they often grow in close proximity. Indeed, numerous specimens assembled since Strother's study has shown the two taxa to be easily recognized, intermediates being conspicuously absent, suggesting specific status for both.

var. hartwegii = Thymophylla hartwegii Fig. 6

This species is easily recognized by the characters called to the fore by Strother, hence its treatment as a monotypic subspecies by the latter author. It is known to grow with or near both *T. puberula* and *T. pentachaeta* without the propensity to form recognizable hybrids with either. For example, in Cochise Co., Arizona *T. hartwegii* is said by Barr (*63-130*, TEX)) to occur "as [a] distinct population but adjacent to *Dyssodia pentachaeta.*" In short, it appears to be a good biological species.

A complete synonymy for all of the above taxa is given by Strother (1969).

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Fig. 1. Bicentric distribution of *Thymophylla pentachaeta*.

Fig. 2. Distribution of *Thymophylla pentachaeta* in Argentina, by Provinces (data from http://www.tropicos.org).

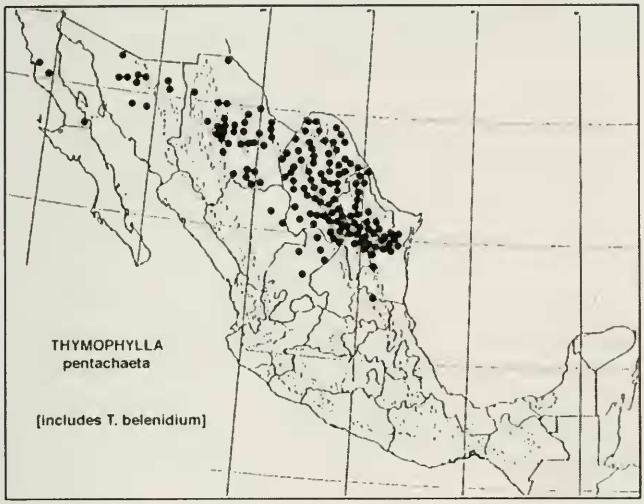

Fig. 3. Distribution of *Thymophylla pentachaeta* in Mexico, as envisioned by Turner (present account).

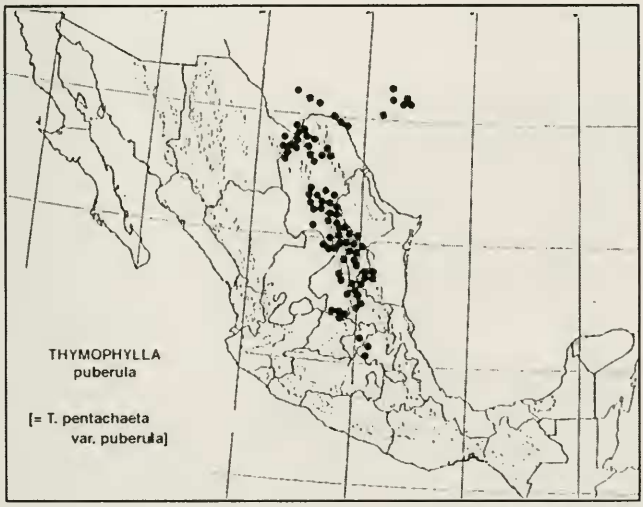

Fig 4. Distribution of *Thymophylla puberula* in North America as envisioned by Turner (present account).

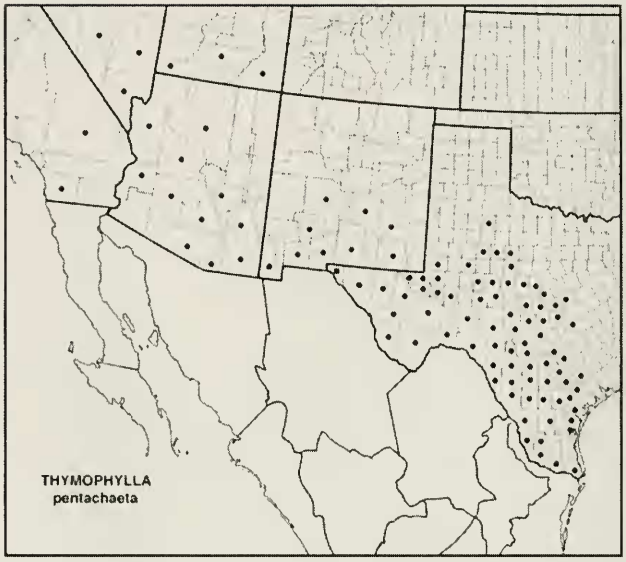

Fig. 5. Distribution of *Thymophylla pentachaeta* in the USA as envisioned by Turner (present account).

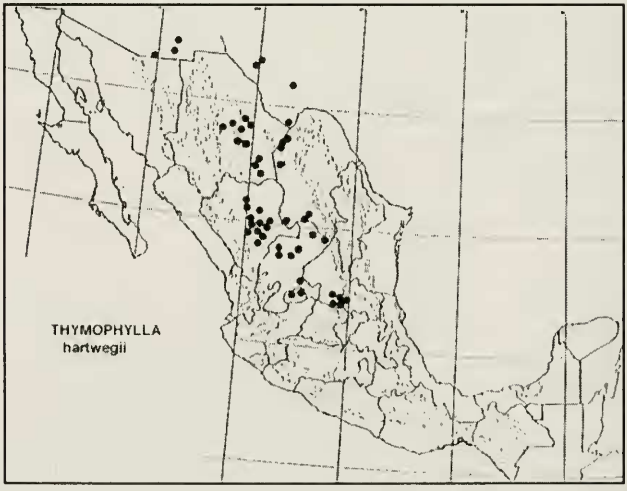

Fig. 6. Distribution of *Thymophylla hartwegii*.